Metoda falsei poziții

Algoritmul 4 (Metoda falsei poziții)

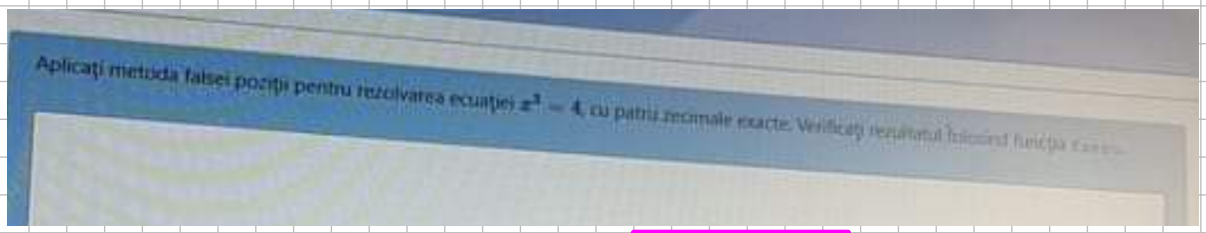
Dându-se intervalul $[a, b]$ astfel încât $f(a)f(b) < 0$
for $i = 1, 2, 3, \ldots$
  $c = \frac{bf(a)-af(b)}{f(a)-f(b)}$
  if $f(c) = 0$, **stop**, **end**
  if $f(a)f(c) < 0$
    $b = c$
  else
    $a = c$
  end
end

I. $f(a) * f(b) < 0$

II. $c = \dfrac{b f(a) - a f(b)}{f(a) - f(b)}$

Calculați $f(c) == 0$ stop

$f(a) f(c) \begin{cases} < 0 \begin{cases} a_{i+1} = a_i \\ b_{i+1} = c_i \end{cases} \\ \geq 0 \begin{cases} a_{i+1} = c_i \\ b_{i+1} = b_i \end{cases} \end{cases}$



$f(x) = x^3 - 4$

$f(x) = 0$

$x^3 = 4$

$1^3 < 4 < 2^3 \mid \sqrt[3]{\ }$

$x = \sqrt[3]{4}$

$1 < \sqrt[3]{4} < 2$

$\Rightarrow [1, 2]$

$\rightarrow f(1) \cdot f(2) = (-3)(4) < 0$ ✓

pas 0: $c_0 = \frac{10}{7} \Rightarrow f(c_0) = \frac{10^3}{7^3} - 4 < 0$

$f(c_0) \cdot f(a_0) > 0 \Rightarrow \begin{cases} a_1 = \frac{10}{7} \\ b_1 = 2 \end{cases}$

pas 1: $c_1 = 1{,}55 \Rightarrow f(c_1) = -0{,}28 < 0$

$f(c_1) \cdot f(a_1) > 0$ $\begin{cases} a_2 = 1{,}55 \\ b_2 = 2 \end{cases}$